

REMARKS/ARGUMENTS

Claims 9-15 and 17-20 are pending in this application and presented for examination. Claim 19 has been amended. No new matter has been introduced with the foregoing amendment. Reconsideration is respectfully requested.

I. FORMALITIES

Claim 19 was objected to as reciting the term "constant" in the phrase "10% constant fraction". Applicants have amended this claim by deleting the term "constant" thereby rendering this rejection moot.

Further, the Examiner has objected to claim 18 as allegedly being a duplicate of claim 19, when all the limitations are considered. To the extent the rejection is applicable to the amended set of claims, Applicants respectfully traverse the rejection.

Claim 18 is dependent from claim 17, and claim 17 recites, "(b) contacting said sensor array with a second odorant with *a vapor pressure lower* than said first vapor pressure to produce a second response intensity;" No such feature is recited in claim 19. As such, Applicants respectfully request that the Examiner withdraw the objection.

II. THE INVENTION

The present invention resides in a method for validating that a sensor array detection ability mimics a human nose detection ability, in that two odorants at constant fractions of their particular vapor pressures will elicit the same response in an electronic nose as in a human nose.

III. REJECTION UNDER 35 U.S.C. § 102

The Examiner has rejected claims 9-11 under 35 U.S.C. § 102(e) as allegedly being anticipated by U.S. Patent No. 6,066,249 ("Manzoni *et al.*"). To the extent the rejection is applicable to the amended set of claims, Applicants respectfully traverse the rejection.

As the Examiner is well aware, to anticipate a claim each and every element of the claim must be found in the prior art (MPEP § 2131).

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

Manzoni *et al.* teach a method for calibrating an instrument for the analysis of blood gases. The instrument possesses electrodes and is used for the determination of the concentration of electrolytes in solution, and of the pH, pO₂ and pCO₂, with calibration being carried out with a buffered solution containing O₂, a known amount of CO₂, and known concentrations of the electrolytes to be determined, in which calibration the pO₂ titer is determined beforehand using atmospheric oxygen as reference.

The Examiner alleges that claims 1, 7-9 and Example 2 of Manzoni *et al.* meet the limitations of claim 9-11 of the instant application, as purportedly, the sensor of Manzoni *et al.* is described as mimicking human detection ability. In response, Applicants assert that Manzoni *et al.* do not teach each and every element as set forth the claim 9 as alleged by the Examiner.

Claim 9 sets forth:

A method for validating that a sensor array detection ability mimics a human nose detection ability, the method comprising:

- (a) contacting said sensor array with a constant fraction of a known vapor pressure of a first odorant to produce a first response intensity;
- (b) contacting said sensor array with a constant fraction of a known vapor pressure of a second odorant to produce a second response intensity;
- (c) comparing said first response intensity to said second response intensity; and
- (d) determining whether said response intensities are similar, thereby validating that said sensor array response detection ability mimics said human nose detection ability.

First of all, the present method is drawn to a method for validating that *a sensor array* detection ability *mimics a human nose detection ability*. The method taught by Manzoni *et al.* refers to a single gas sensitive electrode, not an array of sensors as is currently taught and claimed (*see*, claim 1 of Manzoni *et al.*). Further, there is no teaching or suggestion in Manzoni *et al.* of *mimicking a human nose detection ability*.

As set forth on page 9, lines 9-10, the specification as filed discloses:

As used herein, the phrase "matching response intensity of a sensor array with the detection threshold of the human nose," *refers to the discovery that a comparison between human and electronic nose response data is consistent with a sorption-based effect dominating the odor intensity determinations and, thus, that the electronic nose of the present invention and their response intensities correlate, i.e., match, mimic or track, the mean human olfactory odor detection thresholds, when based on odorant partial pressure*. The response intensity increase as the vapor pressure of the odorant increases. In human olfaction, high odor detection thresholds are observed for odorants that are gases under standard pressure and temperature conditions. Odorants with low vapor pressures generally have low odor detection thresholds

In addition, claim 9 is also drawn to contacting the sensor array with a constant fraction of a known vapor pressure of *a first odorant* to produce a first response intensity. *An odorant is a substance which yields an odor or fragrance*. Manzoni *et al.* teach measuring pO₂ and pCO₂ in biological fluids. These dissolved biological gases¹ are *not odorants*, as the human nose has no ability to detect O₂ or CO₂, as they are both *odorless!!*

Step (b) of claim 9 recites contacting the sensor array with a constant fraction of a known vapor pressure of *a second odorant* to produce a second response intensity. Again, since

¹ Oxygen: a colorless, tasteless, *odorless*, gaseous element occurring in the free state in the atmosphere, of which it forms about 23 per cent by weight and about 21 per cent by volume, being slightly heavier than nitrogen. Symbol O. Atomic weight 15.96. Carbon dioxide: A colorless, *odorless*, incombustible gas, CO₂, formed during respiration, combustion, and organic decomposition and used in food refrigeration, carbonated beverages, inert atmospheres, fire extinguishers, and aerosols. Also called carbonic acid gas.

Manzoni *et al.* do not teach detecting *a first odorant*, Manzoni *et al.* in no way teach detecting *a second odorant*.

As Manzoni *et al.* do not teach detecting a first and second odorant, the reference in no way teaches comparing the first odorant response intensity to the second odorant response intensity; and determining whether the response intensities are similar, to validate that the sensor array response detection ability mimics the human nose detection ability.

As Manzoni *et al.* fails to teach all the elements of the present invention as required under MPEP § 2131, Applicants respectfully request that the rejection be withdrawn.

IV. THE INSTANT INVENTION IS NON-OBVIOUS IN VIEW OF MANZONI *ET AL.*

Claims 17-20 of the instant invention have been rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Manzoni *et al.* To the extent the rejection is applicable to the amended set of claims, Applicants respectfully traverse the rejection.

As set forth in M.P.E.P. § 2143:

[t]o establish a *prima facie* case of obviousness, *three* basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

All three elements set forth above must be present in order to establish a *prima facie* case of obviousness. Applicants assert that a *prima facie* case of obviousness has not been established for the following reasons: 1) there is no suggestion or motivation to modify the references; 2) there is no reasonable expectation of success; and 3) the cited art references do not teach or suggest all the claim limitations.

The Cited Art Reference Does Not Teach All Limitations of the Claims

The prior art reference must teach or suggest all the limitations of the claims. *In re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970). Applicants assert that the prior art reference does not teach or suggest all the limitations of the claims and therefore, the obviousness rejection is untenable.

Claim 17 of the instant application sets forth:

A method for validating that a sensor array detection ability mimics a human nose detection ability, the method comprising:

- (a) contacting said sensor array with a first odorant with a first vapor pressure to produce a first response intensity;
- (b) contacting said sensor array with a second odorant with a vapor pressure lower than said first vapor pressure to produce a second response intensity;
- (c) comparing said first response intensity to said second response intensity; and
- (d) determining whether said second response intensity is greater than said first response intensity, thereby validating that a sensor array detection ability mimics a human nose detection ability.

Present claim 17 is drawn to a method for validating that a **sensor array** detection ability mimics a human nose detection ability. The method taught by Manzoni *et al.* refers to a single **gas sensitive electrode**, not an array of sensors as is currently claimed (*see*, claim 1). Further, there is no teaching or suggestion in Manzoni *et al.* of **mimicking a human nose detection ability**.

Claim 17 is also drawn to contacting the sensor array with a constant fraction of a known vapor pressure of **a first odorant** to produce a first response intensity. Again, an odorant is a substance which yields an odor or fragrance. Manzoni *et al.* teach measuring pO₂ and pCO₂ in biological fluids. These dissolved biological gases are **not odorants**, as the human nose has no ability to detect O₂ or CO₂ (*see*, footnote 1).

Step (b) of claim 17 recites (b) contacting the sensor array with a second odorant with **a vapor pressure lower** than the first vapor pressure to produce a second response intensity. Again, since Manzoni *et al.* do not teach detecting **a first odorant**, they in no way teach detecting **a second odorant**.

Under *In re Wilson supra*, a *prima facie* case of obviousness has not been established because each limitation of the claims is not taught or suggested in the cited art references. Therefore, Applicants respectively request that the Examiner withdraw the rejection.

V. THE INSTANT INVENTION IS NON-OBVIOUS IN VIEW OF MANZONI *ET AL.* AND LEWIS *ET AL.*

Claims 12-15 of the instant invention have been rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Manzoni *et al.* in combination with Lewis *et al.* (U.S. Patent No. 5,571,401). To the extent the rejection is applicable to the amended set of claims, Applicants respectfully traverse the rejection.

1. There is No Suggestion or Motivation to Modify the References

Applicants state that there is simply no motivation or suggestion provided in the cited references to modify their teaching in the way the Examiner has contemplated. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

Claim 9, from which claim 12 depends, recites a method for validating that a sensor array detection ability *mimics a human nose detection ability*. As discussed on page 3, bottom, the present inventors have discovered that odorants with very different vapor pressures have similar sensor responses if the same fractions of their vapor pressures are measured. Thus, the response intensity of an individual sensor is essentially independent of the odorant, if the odorant is present in the gas phase at a constant fraction of its vapor pressure. It is shown herein that electronic nose sensors produce nearly the same odor response intensity from their raw signal outputs at a constant fraction of the vapor pressure of pentane, as for a constant fraction of the vapor pressure of tetradecane. Prior to the advent of the present invention this phenomenon was *unknown*.

There is no teaching in Manzoni *et al.* of a method for validating that a sensor array detection ability mimics a human nose detection ability. Manzoni *et al.* teach a method for calibrating an instrument for the analysis of blood gases. The instrument possesses electrodes and is used for the determination of the concentration of electrolytes in solution, and of the pH, pO₂ and pCO₂, with calibration being carried out with a solution containing O₂, a known amount of CO₂, and known concentrations of the electrolytes to be determined, in which calibration the pO₂ titer is determined beforehand using atmospheric oxygen as reference. There is no teaching with respect to the discovery that a comparison between human and electronic nose response data is consistent with a sorption-based effect dominating the odor intensity determinations and, thus, that the electronic nose of the present invention and their response intensities correlate, i.e., match, mimic or track, the mean human olfactory odor detection thresholds, when based on odorant partial pressure.

Furthermore, Lewis *et al.* do not supply the deficiencies of Manzoni *et al.* In fact, neither Manzoni *et al.* nor Lewis *et al.* teach or suggest a method for validating that a sensor array detection ability *mimics a human nose detection ability*. As obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so, a *prima facie* obviousness rejection has not been established. Therefore, Applicants respectfully request that the Examiner withdraw the rejection.

2. There is No Reasonable Expectation of Success

In addition, there is no reasonable expectation of success that the modification the Examiner contemplates will succeed. "Both the suggestion and the expectation of success must be found in the prior art, not the Applicants' disclosure." *In re Dow Chem. Co.*, 5 U.S.P.Q.2d 1529, 1532 (Fed. Cir. 1988).

Applicants assert that there is absolutely no teaching or suggestion in the cited art to modify the teaching therein to arrive at the presently claimed invention. Rather, the Examiner has used the Applicants' disclosure as a blueprint to pick and choose features from the prior art

in an attempt to reconstruct the presently claimed invention. The present method is drawn to a method for validating that **a sensor array** detection ability **mimics a human nose detection ability**. The method taught by Manzoni *et al.* refers to a single gas sensitive electrode, not an array of sensors as is currently claimed. Further, there is no teaching or suggestion in Manzoni *et al.* nor Lewis *et al.* of **mimicking a human nose detection ability**.

Thus, Applicants submit that the Examiner has used hindsight reconstruction of the cited art in an attempt to piece together the present invention. Hindsight reconstruction is impermissible and therefore, Applicants respectfully request that the Examiner withdraw the rejection.

3. The Cited Art References Do Not Teach All Limitations of the Claims

The prior art references must teach or suggest all the limitations of the claims. *In re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970). Applicants assert that the prior art references do not teach or suggest all the limitations of the claims and therefore, the obviousness rejection is untenable.

In addition, claim 9 is also drawn to contacting the sensor array with a constant fraction of a known vapor pressure of **a first odorant** to produce a first response intensity. **An odorant is a substance which yields an odor or fragrance**. Manzoni *et al.* teach measuring pO₂ and pCO₂ in biological fluids. These dissolved biological gases are **not odorants**. There is no teaching or suggestion in Manzoni *et al.* nor Lewis *et al.* of **mimicking a human nose detection ability**.

Under *In re Wilson supra*, a *prima facie* case of obviousness has not been established because each limitation of the claims is not taught or suggested in the cited art references. Therefore, Applicants respectfully request that the Examiner withdraw the rejection.

VI. CONCLUSION

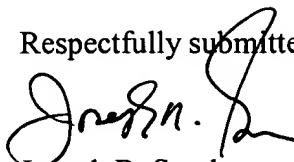
In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

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PATENT

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 925-472-5000.

Respectfully submitted,



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Attachments
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